

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 11988 (1986): Hot seal patches [PCD 12: Plastics]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



Indian Standard
SPECIFICATION FOR
HOT SEAL PATCHES

UDC 629.11.012.558.2

© Copyright 1987

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR HOT SEAL PATCHES

Adhesives Sectional Committee, PCDC 15

Chairman

SHRI G. R. INAMDAR

Representing

Directorate General of Technical Development,
New Delhi

Members

SHRI N. S. GILL	Indian Posts and Telegraphs Department, Jabalpur
SHRI A. B. JAMADAGNI (<i>Alternate</i>)	
SHRI D. CHAKRAVARTY	Dunlop (India) Ltd, Calcutta
SHRI V. AYENGAR (<i>Alternate</i>)	
SHRI A. K. CHANDRA	Chandras' Chemical Enterprises (P) Ltd, Calcutta
DR A. GUPTA (<i>Alternate</i>)	
DR D. K. DAS	National Test House, Calcutta
SHRI ANILENDU GHOSH (<i>Alternate</i>)	
SHRI V. H. DESAI	ILAC Ltd, Bombay
SHRI M. S. THANDANI (<i>Alternate</i>)	
SHRI C. GORDHANDAS	Indian Gum Industries Ltd, Bombay
SHRI D. K. MERCHANT (<i>Alternate I</i>)	
SHRI J. S. PALAV (<i>Alternate II</i>)	
DR S. N. IYER	Johnson & Johnson Ltd, Bombay
DR P. K. MANNA (<i>Alternate</i>)	
DR R. K. JAIN	Central Building Research Institute (CSIR), Roorkee
SHRI R. S. RAWAT (<i>Alternate</i>)	
DR L. D. KANDPAL	Ministry of Defence (R & D)
DR AMAR SINGH (<i>Alternate</i>)	
DR N. R. KONDEKAR	Kondivita Pvt Ltd, Bombay
SHRI K. S. KULKARNI	Carona Sahu Co Ltd, Bombay
SHRI A. R. PARIKH (<i>Alternate</i>)	
SHRI N. G. MAITRA	Sulekha Works Ltd, Calcutta
DR S. D. NANDY (<i>Alternate</i>)	
SHRI N. G. MAITRA	Stationery and Office Equipment Association of India, Calcutta

(*Continued on page 2*)

© Copyright 1987

BUREAU OF INDIAN STANDARDS

This publication is protected under the Indian Copyright Act (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(Continued from page 1)

<i>Members</i>	<i>Representing</i>
SHRI P. R. MALHAN	Office of the Development Commissioner, Small Scale Industry, New Delhi
SHRI D. P. SINGH (Alternate)	
DR W. MILLNS	Indian Rubber Manufacturers' Research Association, Bombay
SHRI N. B. FEGADE (Alternate)	
SHRI H. MITRA	Printing and Stationary Department, Government of India, Calcutta
DR H. A. MONTEIRO	Hindustan Ciba-Geigy Ltd, Bombay
SHRI A. P. BAJI (Alternate)	
SHRI S. K. PAUL	Bata India Ltd, Calcutta
SHRI D. BANERJI (Alternate)	
SHRI A. S. RAJADHYAKSHA	Corn Products Co (India) Ltd, Bombay
SHRI S. R. PALEKAR (Alternate)	
SHRI R. M. V. G. K. RAO	National Aeronautical Laboratory (CSIR), Bangalore
DR R. RAMASWAMY	Indian Space Research Organization, Trivandrum
DR S. K. GUPTA (Alternate)	
SHRI T. N. RAWAL	Ministry of Defence (DGI)
SHRI O. P. GUPTA (Alternate)	
SHRI N. P. SARNAYAK	India Security Press, Nasik
SHRI GANGA PRAKASH (Alternate)	
DR H. C. SRIVASTAVA	Ahmedabad Textiles Industries Research Association, Ahmedabad
SHRI M. M. GHARIA (Alternate)	
DR KRISHAN K. TALWAR	Paper Products Ltd, Bombay
SHRI H. L. CHOPRA (Alternate)	
SHRI M. S. SAXENA, Director (P & C)	Director General, BIS (Ex-officio Member)

Secretary

DR (SHRIMATI) VIJAY MALIK
Deputy Director (P & C), BIS

Rubber-Based Adhesives Subcommittee, PCDC 15 : 2

Convener

SHRI M. P. SINGH	Directorate General of Technical Development, New Delhi
------------------	--

Members

SHRI J. M. GARG (Alternate to Shri M. P. Singh)	
SHRI ANIL AGARWAL	Ministry of Defence (R & D)
DR R. K. SINGH (Alternate)	
SHRI U. K. BANERJEE	Goodyear India Ltd, Calcutta
SHRI E. F. RODERICKS (Alternate)	

(Continued on page 8)

Indian Standard

SPECIFICATION FOR HOT SEAL PATCHES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 4 November 1986, after the draft finalized by the Adhesives Sectional Committee had been approved by the Petroleum Coal and Related Products Division Council.

0.2 This standard deals with hot seal patches (self-vulcanizing patch units) which are used for repairing injuries up to 19 mm length (tear) on natural or synthetic rubber inner tubes of pneumatic tyres.

0.3 Hot seal patches are mainly being used by Defence Services.

0.4 This standard is essentially based on Ministry of Defence, CIV Specification No. IND/VEH/2024 'Hot seal patches'.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and methods of test for hot seal patches capable of repairing injuries up to 19 mm length (tear) on natural or synthetic rubber inner tubes of pneumatic tyres.

2. REQUIREMENTS

2.1 Patch unit shall be made up of a complete and integral item consisting of a piece of hot patch gum (uncured) with a covering on one side and with the other side pressed against the bottom of a fuel

*Rules for rounding off numerical values (*revised*).

pan (platen) of a fuel disc. The patch unit shall be oblong and have the following dimensions:

<i>Width</i>	<i>Length</i>	<i>Thickness</i>
21.5 to 22.5 mm	46.0 to 47.5 mm	1.4 \pm 0.1 mm

2.2 Hot Patch Gum — The hot patch gum as furnished for vulcanizing shall be uncured, soft and plastic rubber compound preferably containing not less than 65 percent natural rubber with no reclaim by volume, and having a covering on one side of white Hollands (linen fabric of coarse texture) not less than 0.125 mm in thickness or of plastic material not less than 0.1 mm in thickness. Either covering shall be easily removable prior to application of the patch unit for repairs.

2.3 Fuel Pan — The fuel pan for patch units shall be made of 27 gauge tin plate or low carbon cold rolled steel sheets to IS: 513-1973*, suitably treated to prevent rust formation. The combination of pan, disc, and thickness of hot patch gum shall furnish sufficient heat to cure the hot patch gum. Notches of V-shape may be incorporated on each side of the pan, provided they fit the spider feet of vulcanizing clamps introduced in service. The fuel pan shall be oblong and have the following dimensions:

<i>Width</i>	<i>Length</i>
35 mm (\pm 1.0 mm)	59 mm (\pm 1.0 mm)

The fuel pan shall be free from oxidized spots and the edges shall be smooth.

2.4 Fuel Disc — After having been ignited, the fuel disc shall have a heat generating capacity to provide a degree of vulcanization in patch so that it shall meet the requirements specified in 2.9. The disc shall burn slowly and evenly, without emission of sparks on to the tube or tyre being repaired. The burning shall be complete within 20 to 30 seconds.

2.5 Vulcanizing Test — After the patch is vulcanized, the cross-section of the joint vulcanized shall indicate uniform fusion, shall be strong without any blister, shall not have porosity and shall not be easily separated or torn. The joint shall not peel off from the periphery when a gentle pressure is applied by hand.

*Specification for cold rolled carbon steel sheets (second revision).

2.6 Tensile Strength — The tensile strength of the properly cured patch gum, when determined in accordance with IS : 3400 (Part 1)-1977* shall not be less than 17 MPa.

2.7 Hardness — The hardness of the properly cured patch gum, when determined in accordance with IS : 3400 (Part 2)-1980†, shall be 44 ± 4 IRHD. Hardness determination shall be made on specimen built up from layers of properly cured patches to a thickness of not less than 6.5 mm.

2.8 Keeping Quality — Patch unit shall show no evidence of self-vulcanizing for a period of 9 months from the date of acceptance when stored under normal conditions of temperature $27 \pm 2^\circ\text{C}$ and 65 ± 5 percent relative humidity. It shall also withstand for a period of 50 hours when stored at 90°C .

2.9 Endurance Test — The sample shall be applied to rubber inner tube on an injured section of 6 to 12 mm in diameter. After repairing, the tube shall be installed in tyre on a test vehicle. The vehicle shall be driven under the stipulated road conditions for a distance of 100 km after which the patch shall still be serviceable.

3. PACKING AND MARKING

3.1 Packing

- a) One separate piece of uncured gum material approximately 12.5 mm wide, 76 mm long and 1.4 mm thickness, for use as filler material shall be supplied with each tin.
- b) A buffer shall be provided with each container suitable for buffing tube injuries.
- c) Each patch unit shall be individually packed in a polyethylene bag. Ten such patch units along with buffer and spare gum piece shall be packed in close fitting, air-tight metallic containers. After packing, the containers shall be closed and made waterproof by sealing with plastic tape.

3.2 Marking — Each container shall be legibly and durably marked with the following :

- a) Name of material;
- b) Manufacturer's name and recognized trade-marks, if any;

*Methods of test for vulcanized rubbers : Part 1 Tensile stress strain properties.

†Methods of test for vulcanized rubbers : Part 2 Hardness.

- c) Month and year of manufacture;
- d) Complete instructions for application and use of patch units; and
- e) Storage instructions and cautions — 'STORE IN DRY AND COOL PLACE'.

3.2.1 The packages may also be marked with the Standard Mark.

NOTE— The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers, may be obtained from the Bureau of Indian Standards.

4. SAMPLING

4.1 Lot— In any consignment, all the metallic containers manufactured in one batch, shall constitute a lot.

4.2 For ascertaining the conformity of the lot, samples shall be taken from the lot. Unless otherwise agreed to between buyer and the seller, a sample shall be selected according to Table 1.

TABLE 1 NUMBER OF SAMPLES TO BE SELECTED

NO. OF CONTAINERS IN THE LOT SIZE	NO. OF CONTAINERS TO BE SELECTED	ACCEPTANCE NUMBER
(1)	(2)	(3)
Up to 50	3	1
51 to 100	5	2
101 to 300	8	3
301 to 500	13	5
501 and above	20	7

4.2.1 The samples shall be collected from the lot at random and in order to ensure the randomness of selection, the procedure given in IS : 4905-1968* may be followed.

*Methods for random sampling.

5. NUMBER OF TESTS

5.1 Test for dimensional requirements shall be conducted on three patch units on each of the tins selected.

5.2 After measuring the dimensional requirements, these three patch units selected from each tin shall be subjected to tensile strength, vulcanizing test and hardness test.

5.3 Having found the lot satisfying the requirements of **5.1** and **5.2** test for keeping quality and endurance test shall be conducted. For this purpose two patch units shall be selected from the containers selected in col 2 of Table 1.

6. CRITERIA FOR CONFORMITY

6.1 The lot shall be declared as conforming to the requirements of **5.1**, if the number of defective patch units are less than or equal to the acceptance number given in col 3 of Table 1.

6.2 For the tests mentioned in **5.2** and **5.3**, the lot shall be declared as conforming to these requirements if there is no failure.

6.3 The lot shall be declared as conforming to the requirements of the specification of **6.1** and **6.2** are satisfied.

(*Continued from page 2*)

Members

SHRI D. J. BEARUCHA
SHRI N. D. DESAI (*Alternate*)
SHRI D. CHAKRAVARTY
SHRI V. IYENGAR (*Alternate*)
DR N. R. KONDEKAR
SHRI Y. S. LATHIA

SHRI S. V. LATHIA (*Alternate*)
DR S. M. SINGH

Representing

Bayer (India) Ltd, Bombay

Dunlop (India) Ltd, Calcutta

Kandivita Pvt Ltd, Bombay
Lathia Rubber Manufacturing Company Pvt Ltd,
Bombay

Central Building Research Institute (CSIR),
Roorkee